4.1 DESCRIPTIONS OF ADJUSTED CORRIDORS

As discussed in Section 2, the 1970s corridors (Exhibit 1-3) were adjusted as shown in Exhibit 2-2. The rationale for the adjustments is presented below. Each adjusted corridor is described in an east to west direction.

4.1.1 Corridor A

The adjusted Corridor A, now the northern corridor, consists of the eastern part of the 1970s Corridor A, combined with the western part of the 1970s Corridor B.

The eastern terminus of the 1970s Corridor A corridor did not require adjustment—it included an appropriate interchange at I-474. The eastern terminus at I-474 is at Interchange 3, the "Bellevue Stub," a 4-lane roadway segment that extends about a mile to the west of I-474 and ends at the north-south Maxwell Road. The Bellevue Stub extends only to the west, and there is no direct access to or from the east at Interchange 3. Farmington Road (to the north) and IL 116 (to the south, also called Plank Road) both parallel the Bellevue Stub, and both cross I-474, with no interchange. Traffic entering or leaving Interchange 3 can access either Farmington Road or IL 116 from Maxwell Road, via the Bellevue Stub.

The adjusted Corridor A follows the same concept as the 1970s Corridor A in that it generally follows the alignments of IL 116 and 78 between Peoria and Canton. For approximately the first 15 miles on the east, Corridor A follows the existing alignment of IL 116. IL 116 is a logical location for an east-west roadway, following a major drainage divide over relatively level terrain. Where Corridor A moves from the IL 116 alignment to the IL 78 alignment, the corridor was adjusted to smooth out the sharp southward turn, and to avoid the town of Farmington and a new school being constructed just southeast of Farmington.

The 1970s corridors included the City of Canton. The corridor was initially shifted to the northwest to avoid direct impacts to the following: the city of Canton, Lakeland and Big Creek Parks (just northwest of the city); and Canton airport and the prison west of the city. Because of the presence of the Double T State Fish and Wildlife Area, the Ag Area northwest of Canton, and the potential for impacts to the state endangered species the upland sandpiper, the corridor was also widened to the northwest near Canton.

In the 1970s study Corridor A started out in the east as the northern corridor, then ended up in the west as the middle corridor (Exhibit 1-3). With the adjustment of the northwest bypass of Canton, the western segment of the 1970s Corridor B was a better fit with the adjusted Corridor A. Therefore, the western part of the 1970s Corridor B was combined with the eastern part of adjusted Corridor A to make a redefined Corridor A. The western part of the 1970s Corridor B (now the western part of Corridor A) followed the IL 9 alignment to the point where it jogs to the north. From there, it headed west-southwest to come close to Bushnell, then headed due west to US 67. The adjusted corridor was widened both to the north and south, to include the

option of using the full IL 9 alignment to US 67, and the option of ending at the proposed Macomb bypass.

The portion of the 1970s corridor inside the proposed Macomb bypass was deleted; the bypass is now the logical terminus for any alignment that would be considered in Corridor A south of the intersection of US 67 and the bypass.

4.1.2 Corridor B

The adjusted Corridor B consists of the eastern part of the 1970s Corridor B, combined with the western part of the 1970s Corridor A.

The eastern terminus of 1970s Corridor B lines up with the current I-474 Interchange 5, but a connection at that interchange is not feasible because the Peoria airport is in the way. In order to connect to I-474 and miss the airport, an alignment would have to go south of the airport and then back north along Airport Road to Interchange 5. This is not feasible because that area is built up. The other option is to follow Smithfield Road down over the bluff to US 24 and Interchange 6. This option was considered infeasible because of parks located near the alignment (Lauterbach and Alpha) and the relativity dense built-up area around Interchange 6. Because there were no other feasible options available, Corridor B was adjusted to terminate at Interchange 3, same as Corridor A. The eastern part of Corridor B was then adjusted northward to avoid the airport, resulting in Corridors A and B being coincident for the first few miles on the eastern end.

Of the three corridors considered, Corridor B represents the most direct route from Peoria to Canton, cutting cross-country over many small drainages and relatively rugged terrain. It generally does not follow existing roadway alignments.

As with Corridor A, adjustments were made to avoid direct impacts to Canton and surrounding developments. The corridor was moved to the south to avoid Canton Lake, which is the water supply reservoir for the City of Canton and also includes public recreation land. A northward adjustment would have resulted in Corridor B following the same route around Canton as Corridor A. Adjusting the corridor to the south allowed for the option of a southern bypass of Canton, and an efficient tie-in to the center corridor on the west side of Canton (the western part of 1970s Corridor A). The southern bypass also allowed for combinations of Corridor B and C.

The western part of the 1970s Corridor A (now Corridor B) was apparently conceived as the most direct route from Canton to Macomb, slightly adjusted to come close to Cuba and to accommodate the traffic between Cuba and Canton. From the Cuba area, this segment headed almost due west and incorporated the east-west segment of US 136 that lies to the east of Macomb.

On the west side of Canton, between Canton and Cuba, the corridor was expanded slightly on the north to include the full alignment of the "Cuba to Canton blacktop" (County Road 5) and to

allow for a northern bypass of the City of Cuba. West of Cuba the corridor was shifted to the north to include the existing IL 95 alignment. This shift also allows for inclusion of the IL 95 Spoon River bridge, thereby providing the potential to use an existing river crossing, which the 1970s corridor did not provide.

The adjusted Corridor B ends at the proposed Macomb bypass.

4.1.3 Corridor C

The eastern terminus of Corridor C is the intersection of US 24 and I-474, Interchange 6 on I-474.

Corridor C follows the alignment of US 24 to Lewistown, then heads due west, following no existing roadway alignments, to the terminus at US 67 south of Macomb. US 24 follows the Illinois River from Peoria to a mile or two beyond its intersection with northbound IL 78, hugging the western bluff. US 24 is currently built to 4 lanes to Kingston Mines, and is approved for 4 lanes to Banner. The western part of this 4-lane section is built to expressway standards, but the eastern 10 miles is a congested urban arterial with numerous traffic signals and no access restrictions. The western, expressway portion of US 24 could be incorporated into IL 336 if Corridor C were selected. The eastern, urban arterial portion would need to be upgraded to freeway or expressway standards, whichever is selected, to meet the criteria established for IL 336.

Only very minor adjustments were made to Corridor C. The segment that connects the corridor to Canton was adjusted to the north to include the existing IL 9 alignment. The segment in the vicinity of the IL 78-US 24 intersection was adjusted slightly to include the existing US 24 alignment. The north-south optional connector near the east end was eliminated; with the presence of I-474, it is no longer relevant.

4.2 FULFILLMENT OF PURPOSE AND NEED

This section compares the three corridors in terms of ability to meet the purpose and need of the project:

- Enhanced economic stability in the study area;
- Improved regional transportation continuity and improved linkage of west-central Illinois to major economic markets;
- Travel efficiency.

4.2.1 Enhanced Economic Stability

The greatest benefits to enhanced economic stability would result from a highway that provides the best access to existing populations and markets in the study area, and the best access from the study area to outside markets.

Overall, Corridor B probably provides the best access for Canton, the largest city within the study area (15,288), although part of Corridor A is equally close. Overall, Corridor C is farthest from Canton, although an alignment at the far north edge of Corridor A would be similarly distant. The growth trend at Canton appears to be to the north and northwest, favoring Corridor A.

Other study area towns are served by the three corridors. Corridor A serves Bushnell (3,221), Farmington (2,554), and Bellevue (1,887). Corridor B serves Bellevue (1,887) and Cuba (1,418). Corridor C serves Bartonville (population 6,310), Lewistown (2,522) and Glasford (1,076). All other towns within the study area have populations less than 1,000.

All corridors provide good access to Peoria, through I-474. Corridor C provides better access to industries and markets along the Illinois River and in south Peoria, and Corridors A and B provide better service to the north part of Peoria and to the airport. Both Corridors A and B provide better service to Macomb than Corridor C.

Summary

Overall, in terms of enhancing economic stability, all three corridors appear to be similar, with Corridors A and B being preferred somewhat over Corridor C because of the greater proximity to Canton and better access to Macomb.

4.2.2 Improved System Linkage

IL 336 from Macomb to Peoria is the final link in the system of 4-lane highway improvements in west-central Illinois. The four-lane highway improvements that are either existing, under construction, or approved are shown in Exhibit 2-1.[20] The improvements consist of a west-to-east route, IL 336, which extends from Quincy to Macomb; and a north to south route, US 67, which extends from Alton to Monmouth. Where IL 336 and US 67 meet at Macomb, a connecting bypass is proposed.

From a regional perspective, the most desirable link is the one that is shortest and that connects at a location where it has the quickest access to the other parts of the system. With respect to the connecting locations, all corridors appear to be about equal on the east side, because they all connect into the four-lane system at I-474, which allows access to Peoria, I-74 and I-155. Since

[20] One small segment, the Macomb bypass, is still awaiting approval.

the Macomb bypass connects all the existing or approved components of the system (IL 336 west of Macomb and US 67 both north and south), the bypass is the most favorable western terminus for system linkage.

Corridor A

Corridor A, at about 57 miles in length, is about one mile longer than Corridor B and about 4 miles shorter than Corridor C. It has the option of connecting with the Macomb bypass.

Corridor B

Corridor B is the shortest and connects with the Macomb bypass. However, for east-west traffic moving on IL 336 across the state, it could result in a slightly longer route than Corridor A because it might connect to the Macomb bypass further south than the Corridor A connection.

Corridor C

Corridor C is the longest by about 4 miles and connects with US 67 south of Macomb, and thus lacks the advantage of a connection with the bypass. Corridor C provides access to US 67 equal to the other two corridors, but the continuity of IL 336 is disrupted by the need to drive north around Macomb to access IL 336 on the east side of Macomb. For traffic moving east-west across the state on IL 336, this adds about 5 to 8 additional miles to the route, compared with Corridors A or B.

Summary

Corridors A and B are essentially the same in terms of system linkage, and either is preferred over Corridor C. Corridor C is about 4 or 5 miles longer than A or B. Because it does not have the option of connecting with the Macomb bypass, this corridor is effectively 9 to 13 miles longer than Corridors A or B for trips on IL 336 between the west side of Macomb and Peoria.

4.2.3 Travel Efficiency - Improved East-West Access

In the Traffic Study done for this project (Appendix A), year 2030 traffic projections were developed for the study area, based on current traffic volumes and estimated growth rates. These data, along with the results from the origin-destination study included in the Traffic Study, were used to develop traffic projections for the three build scenarios—Corridors A, B, and C. This section summarizes the traffic projections. Details of the data and analysis are included in the Traffic Study in Appendix A.

4.2.3.1 Canton to Peoria

The estimated 2030 east-west AADT between Peoria and a north-side line through the study area passing approximately through Canton is over 33,000. Although some of this traffic will use the

local roads, most of it will travel on either U.S. 24 or IL 116 between Peoria and Canton, if IL 336 is not built.

If the new IL 336 is built in Corridor C, the estimated split of traffic results in about 60% of the 33,000 AADT, or 20,000, on the new IL 336 (Corridor C). Forty percent of the 33,000 AADT, or 13,000, would use existing IL 116 (Exhibit 4-1).

If IL 336 were constructed within Corridor A or Corridor B, an estimated 35% of the 33,000 AADT, or 12,000, would remain on U.S. 24. The remaining 65% of the 33,000 AADT, or 21,000, would use the new IL 336, as shown in Exhibits 4-2 and 4-3.

The estimated capacity of a four-lane divided expressway or freeway, at an acceptable level of service, is around 20,000 to 24,000 AADT. Therefore, based on the assumed split of traffic, IL 336, if built in any of the corridors, would be operating within an acceptable level of service in 2030.

However, under the Corridor C scenario, IL 116 would be carrying around 13,000 AADT by 2030, as shown in Exhibit 4-1. These volumes would require a four-lane section on IL 116 to achieve an acceptable level of service. In fact, traffic data from IL 116 (8,001 – 16,000 AADT) shows a current need for a four-lane section from Peoria to Hanna City. The area justifying a four-lane section extends to Farmington in the planning year of 2030.

Corridor B provides a four-lane highway from I-474 to Hanna City, then heads southwest to Canton. The origin-destination surveys indicates that almost half the existing trips on IL 116 east of Hanna City are coming from west of Hanna City. In 2030, this would be about 10,000 AADT, almost half the 21,000 forecasted to use the new IL 336. These travelers would not use a highway in Corridor B, until east of Hanna City. The 10,000 AADT remaining on IL 116 would warrant improvements to Farmington.

4.2.3.2 Summary

Corridor A would be most effective in serving projected traffic between Canton and Peoria, and Corridor C would be least effective. Traffic projections show that if IL 336 is constructed in Corridor C, capacity improvements will still be needed on IL 116 between Peoria and Farmington. If IL 336 is constructed in Corridor B, capacity improvements will also be needed on IL 116, between Hanna City and Farmington.

4.2.3.3 Canton to Macomb

Traffic in the western portion of the study area is not as high as in the eastern portion. The majority of the traffic is headed to, or through Macomb. A Macomb bypass is planned to connect Illinois 336 west of Macomb with U.S. 67 near the Macomb Airport. From there, it would turn southeast and south to connect with U.S. 67 east of Macomb. This alignment was based on information obtained in the *Origin-Destination Survey and Report for the Macomb Area Study*

(Parsons, Brinckerhoff, Quade & Douglas, Inc.) indicating most of the traffic was headed to the northern portion of Macomb. The Western Illinois University campus, northwest of Macomb, was a primary destination.

Corridor C from Banner to Macomb would not serve this traffic. In addition, it does not provide a direct connection from Canton to Macomb.

Summary

From Canton to Macomb, Corridor C is the least preferred because it does not serve either community as well as either Corridor A or B.

4.2.4 Travel Efficiency - Reductions in Travel Time and Improved Safety

A new facility in any of the three corridors would improve travel time and provided safety features by virtue of improved vertical and horizontal alignments, passing lanes, and reduction in vehicle conflicts at intersections, railroad crossings, and access points. There does not appear to be any substantive difference among the corridors in this respect.

4.3 SOCIO-ECONOMIC CONSIDERATIONS

4.3.1 Social Impacts

4.3.1.1 Age

Exhibit 4-4 shows the distribution of population over 65 years of age (2000 census) with the corridors overlaid. In Corridor A there are several locations along IL 116 with 31-50% elderly population, and an area south of Farmington with more than 50% elderly population. From the Spoon River west in Corridor A, there are several locations with elderly population greater than 50%, and several with 31-50%. In Corridor B there are a few scattered locations with 30-50% elderly between I-474 and Canton, and two locations just east of Canton with elderly population greater than 50%. In Corridor B the overall percentages of elderly are higher near Macomb, as in Corridor A. In Corridor B, there is one location at Cuba and one south of Smithfield with greater than 50% elderly. There are several locations throughout Corridor C with elderly population 31-50%, and one area east of Lewiston with greater than 50% elderly. The corridor also includes parts of greater than 50% areas near Macomb.

Summary

All the corridors have scattered locations with relatively high percentages of elderly population, and none of the three seem to be clearly preferred in this respect. Because of the scattered and localized nature of these areas and the overall generally low population density where they do occur, all corridors appear to have the opportunity for alternatives that do not have a disproportionate adverse impact on the elderly population.

4.3.1.2 Minority Populations

While the overall percentage of minorities in the study area is well below the national average, there are locations within the study area with relatively high percentages of minority population, as shown in Exhibit 4-5. In Corridor A there are several areas along and near IL 116 with minorities at 31-50% of the population, and one west of Hanna City with greater than 50% minority population. Minority percentages are generally low in the rest of Corridor A, with one area of 31-50% just northwest of Bushnell and another west of Bushnell. In Corridor B, there are several areas between I-474 and Canton with minority percentages of 31-50%, but very little in the corridor west of Canton. In Corridor C there are three scattered locations with minority percentages of 31-50%, and one with minorities greater than 50 percent of the population, near the west end.

Summary

All the corridors have scattered locations with relatively high percentages of minorities, and none of the three seem to be clearly preferred in this respect. Because of the scattered and localized nature of these areas and the overall generally low population density where they do occur, all corridors appear to have the opportunity for alternatives that do not have a disproportionate adverse impact on the minority population. There is one location in Corridor A, near Hanna City on the north side of IL 116 where the population is relatively dense and the minority population percentage is greater than 50. Depending on where it is located, a route through this block could potentially result in a disproportionate impact on minorities. However, there are definitely avoidance opportunities at this location if a route through that block would result in disproportionate impacts.

4.3.1.3 Latino and Hispanic Populations

Both Corridors A and B have three areas or parts of areas with Latino/Hispanic population between 11 and 30%, and one area with 31-50%. Corridor B has three areas or partial areas with Latino/Hispanic population between 11 and 30%, and one area with 31-50%. Corridor C has one area with Latino/Hispanic population between 11 and 30%, and one with greater than 50%. Distributions are shown in Exhibit 4-6.

Summary

The potential for disproportionate impacts to the Latino/Hispanic population in the study area appears to be small, and similar for all three corridors.

4.3.1.4 Income and Housing Values

As reported in Section 3, income and house value data are available only by census tract and do not permit as detailed an evaluation as some of the other factors. However, based on the

available data, there is no discernable difference among the three corridors in terms of impacts on low-income populations, or areas with low housing values. There is one very low income area shown in Exhibit 4-7, in the west part of Macomb, outside the corridor.

4.3.1.5 Summary

Comparisons of census data among the corridors indicates that there is no substantive difference in the corridors in terms of potential disproportionate impacts on elderly, minority, Latino/Hispanic, or low income populations.

4.3.2 Displacements

One of the objectives in the corridor location study phase is to plan a corridor that will minimize impacts to the cohesiveness of individual communities; hence, the adjustments discussed above, to avoid impacts to communities. When avoidance is not possible, there are several mitigation measures to include in the design of the roadway including adjusting the horizontal alignment, providing vehicular crossings, providing pedestrian and bike crossings, and adding noise barriers.

For those persons displaced, under the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, IDOT is required to provide "just compensation" or fair market value of property. The Relocation Assistance Program was established to help offset the adverse impacts of relocation.

With any large project, there will be definite social impacts and displacements of residences and business. Table 4-1 lists the estimated number of potential residential/business displacements for each corridor. Corridors A and B are similar, with an estimate 80± and 90±, respectively. The estimate for Corridor C is 30% higher than B, at 120±.

4.4 POTENTIAL ENVIRONMENTAL EFFECTS

4.4.1 Hazardous Waste Sites

Hazardous waste sites are of concern because of the potential added costs for remediation during construction.

As shown in Exhibit 4-8, there are six CERCLIS sites in or near the study area.[21] The UNR-ROHN site on Plank Road (IL 116) is located in both Corridor A and B, and the Hixon Plating Company Site in Bushnell is in Corridor A only. The other sites, as shown in Exhibit 4-8, are

[21] CERCLIS is the Comprehensive Environmental Response, Compensation, and Liability Information System. CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL. The CERCLIS is maintained by the U.S. Environmental Protection Agency.

not within any of the corridors. The UNR-ROHN site could potentially impact Corridors A and B, but the likelihood is low enough that it was not considered in the cost estimates. The Hixon Plating Site is located in Bushnell, and it is very unlikely that a route would be close to it. Other sites are outside the corridors and are unlikely to have an effect.

With respect to CERCLIS sites, Corridor C has a slight advantage over A and B because it has none. However, this investigation did not include other potential hazardous waste sites such as leaking underground fuel storage tank sites, which are likely to be present along the 10 miles of congested urban arterial in Corridor C. Overall, the issue of hazardous waste does not appear to be an important issue for any of the Corridors at this stage.

4.4.2 Section 4(f) and Section 6(f) properties

4.4.2.1 Section 4(f)

Legal, Regulatory, and Policy Background

Section 4(f) has been part of Federal law in some form since 1966. It was enacted as Section 4(f) of the Department of Transportation (DOT) Act of 1966 (hence the reference to "Section 4(f)"). Section 4(f) was originally set forth in Title 49, United States Code (U.S.C.), Section 1653(f), and applies only to agencies within the DOT. Also, in 1966, a similar provision was added to Title 23 U.S.C. Section 138 (23 USC 138). Both have been revised over the years, and the wording is somewhat different, but the intent is the same. Section 4(f) applies to all programs of DOT, whereas Section 138 applied only to the Federal-Aid Highway Program. According to 23 USC 138, the Secretary of Transportation shall not approve a project (except for certain park roads) "which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic site of national, State, or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreational area, wildlife and waterfowl refuge, or historic site resulting from such use.[22]

The applicable regulations at Title 23 of the Code of Federal Regulations, Section 771.135 (25 CFR 771.135) further state:

> (a) (1) The Administration may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:
>
> (i) There is no feasible and prudent alternative to the use of land from the property; and

[22] United States Code (USC), Title 23--Highways, Section 138--Preservation of Parkland.

(ii) The action includes all possible planning to minimize harm to the property resulting from such use.

(2) Supporting information must demonstrate that there are unique problems or unusual factors involved in the use of alternatives that avoid these properties or that the cost, social, economic, and environmental impacts, or community disruption resulting from such alternatives reach extraordinary magnitudes.

According to FHWA policy, a "use" occurs:

(1) when land from a Section 4(f) site is acquired for a transportation project,
(2) when there is an occupancy of land that is adverse in terms of the statute's preservationist purposes, or
(3) when the proximity impacts of the transportation project on the Section 4(f) sites, without acquisition of land, are so great that the purposes for which the Section 4(f) site exists are substantially impaired (normally referred to by courts as a constructive use)[23]

For multiple-use land, the Section 4(f) designation does not necessarily apply to the entire park, recreation area or refuge:

(d) Where Federal lands or other public land holdings (e.g., State forests) are administered under statutes permitting management for multiple uses, and, in fact, are managed for multiple uses, section 4(f) applies only to those portions of such lands which function for, or are designated in the plans of the administering agency as being for, significant park, recreation, or wildlife and waterfowl purposes. The determination as to which lands so function or are so designated, and the significance of those lands, shall be made by the officials having jurisdiction over the lands.[24]

Regarding historic sites (including archaeological sites), the regulation states the following:

(e) In determining the application of section 4(f) to historic sites, the Administration, in cooperation with the applicant, will consult with the State Historic Preservation Officer (SHPO) and appropriate local officials to identify all properties on or eligible for the National Register of Historic Places (National Register). The section 4(f) requirements apply only to sites on or eligible for the National Register unless the Administration determines that the application of section 4(f) is otherwise appropriate.[25]

[23] FHWA Section 4(F) Policy Paper, September 24, 1987 *(Revised June 7, 1989)*

[24] 25 CFR 771.135

[25] 25 CFR 771.135

Potential 4(f) Impacts on this Project

As shown in Exhibit 4-9 and Table 4-1, there are three parks, conservation areas, or refuges in Corridor A, two in Corridor B, and four in Corridor C. In Corridor A, there is a small township park just south of Farmington and a small park in Bushnell, both of which could be easily avoided. Corridor A also has Double T State Fish and Wildlife Area, a large area northwest of Canton. Corridor B includes a small portion of Canton Lake, which has an associated recreation area, and a small township park south of Cuba. Corridor C has two small county parks near Mapleton, a very large state fish and wildlife area (Banner Marsh), and a very large state conservation area (Rice Lake). In addition, Chautauqua and Emiquon National Wildlife Refuges, Pekin Lake State Conservation Area, and Powerton State Fish and Wildlife Area are just outside the corridor boundary.

In addition to the public lands, there is one National Register property in each corridor: the Duvall-Ash Farmstead located west of Canton, southwest of Double T, in Corridor A; the Seville Bridge, crosses the Spoon River between Smithfield and Marietta, in Corridor B; and Peoria State Hospital, located in Bartonville west of I-474, in Corridor C. A list of National Register properties within the study area is included as Table C-5. All of these properties are small and therefore relatively easily avoided. As part of this study, a survey of potentially eligible historic structures was made and is being evaluated. In Corridor A, 61 structures were identified; 35 in Corridor B and 18 in Corridor C. Potentially eligible historic structures will be evaluated in detail in the next phase of the study.

Corridor C has the greatest potential for Section 4(f) impacts of the three corridors. The likely route for a highway through the eastern part of Corridor C is US 24, which hugs the bluff at the edge of the Illinois River floodplain. The floodplain along this stretch of US 24 is essential a string of refuges and conservation areas. Corridor B has the least potential for impacts, with only two small park areas within the corridor. Corridor A, with the large Double T Conservation Area, has more potential for impacts than Corridor B, but considerably less than Corridor C.

4.4.2.2 Section 6(f)

Section 6(f) of the Land and Water Conservation Fund Act[26] requires special coordination with and approval of the National Park Service if lands which were acquired or developed with funds provided by the Land and Water Conservation Fund (LWCF) are used for purposes other than public outdoor recreation. As shown in Exhibit 4-9, some of the small Section 4(f) parks are also Section 6(f) land.

In all three corridors, the Section 6(f) properties are small and easily avoided.

[26] P.L. 104–333

4.4.3 Wooded Areas

As shown in Table 4-1, only about 8% of the land in Corridor A is wooded (or forested). Exhibit 4-10 shows that most of the wooded land in Corridor A is in drainages along the Spoon River. Corridors B and C include similar percentages of wooded area, at 23% and 20%, respectively.

4.4.4 Archaeological Resources

Archaeological resources tend to be found near water features such as rivers and streams. Most of the archaeological sites in the study area are located along the Illinois and Spoon Rivers and tributaries.

All the corridors cross the Spoon River. Both Corridors A and B have the option of using an existing crossing, but Corridor C does not. Neither Corridor A nor B is near the Illinois River, but about half of Corridor C is along the Illinois River. Corridor C, then, would be expected to have the most impact on archaeological resources, with Corridors A and B being similar to each other, and considerably less.

4.4.5 Threatened and Endangered Species

As shown in Exhibit 4-11, Corridor A has two occurrences of one state endangered bird species, the upland sandpiper, around the northern part of Canton. A state-threatened species of plant, the Bunchflower, also occurs in Corridor A near the eastern terminus, west of Bushnell. Corridor B also has two occurrences of the Upland Sandpiper, south of Canton. The Northern River Otter, a state-threatened mammal species, is shown in Corridor B just west of Smithfield. A federal threatened species, the Bald Eagle, occurs several places along Corridor C. Also, near Corridor C, south of Banner, is another federal threatened species, the Decurrent False Aster (plant). Three state-threatened species occur in Corridor C, the Pied-billed Grebe (bird), the Northern River Otter, and the Bunchflower. The only state-endangered species occurring in Corridor C are the American Bittern and the King Rail, both birds. All the threatened and endangered species in Corridor C occur along the Illinois River between Kingston Mines and Liverpool in or near state fish and wildlife areas. A list of both federal and state listed threatened and endangered species location within the study area is included as Table C-6.

The federally listed threatened and endangered species occur only in Corridor C, which also has the largest number of occurrences, and the least flexibility for alignments, at least along the US 24 part of the corridor. Corridor C appears to have the highest potential for impacts to threatened and endangered species, and Corridors A and B appear similar to each other, and considerably less.

4.4.6 Prime Farmland/Protected Agricultural Land

As shown in Exhibit 4-12 and Table 4-1, impacts to agricultural land (which in the study area consists mostly of prime farmland) are unavoidable with all options. Corridors A and B also have protected Ag Areas, which could be avoided.

Corridor A, which follows relatively level drainage divides for much of its length, has the high percentage of agricultural land, at 87% of its total area. Corridors B and C are similar to each other, with 67 and 62%, respectively.

4.4.7 Streams and Lakes

As shown in Table 4-1, Corridor C has the greatest number of potential stream crossings at 34, then Corridor A at 26 and Corridor B at 23. Many of these streams are very small. Exhibit 4-13 shows that all the Corridors have the potential to impact watersheds with Section 303(d) listed waterbodies.

While all three corridors cross the Spoon River, Corridors A and B both have the option of using an existing crossing. Corridor C does not. The western end of Corridor A enters the La Moine River watershed, where impacts on Drowning Fork a water supply stream, would need to be avoided.

Corridor C would be expected to have the greatest potential for impacts to streams and water bodies because it has the most stream crossing and because it requires a new crossing of the Spoon River. Corridors A and B are similar to one another.

4.4.8 Wetlands

As shown in Table 4-1, approximately 2% of Corridor A consists of wetlands, with Corridor B at 5% and Corridor C at 8%. Exhibit 4-14 shows that most of the wetlands in Corridors A and B are probably associated with former strip-mines in the Cuba-Canton-Norris area, and some impacts will be unavoidable, at least in Corridor B, because the strip-mined areas are so widespread. Wetlands in Corridor C appear to be mostly along the Illinois River, where some impacts would probably also be unavoidable. Corridor C appears to have the highest potential for wetland impacts, and Corridor A the lowest.

4.4.9 Floodplains

Because of its proximity to the Illinois River, Corridor C has the greatest potential for impacts to floodplains. This is shown clearly in Exhibit 4-15, which shows the wide Illinois River floodplain along US 24. Also, while all corridors must cross the Spoon River, Corridor C crosses it at a location nearer the Illinois River, where the floodplain is much wider than in Corridor A or B. Corridors A and B are similar to each other. Corridor A has very few floodplain areas in the east, but, in addition to the Spoon River and tributaries, it enters the La

Moine River watershed and includes several associated floodplains at the west end of the corridor. Corridor B includes several small floodplains in the east, Big Creek near Canton, then the Spoon River in the west.

4.5 ENGINEERING CONSIDERATIONS

4.5.1 Topographic Features

Major topographic features in the study area include the following:

- Flat to gently rolling areas that are used for agriculture,
- Rolling areas that are used for pasture
- Wooded (forested) areas that lie mostly in more rugged drainages along major streams
- Former strip mined areas with poor drainage and elongated ridges and lakes remaining from mining operations. Some of the mines are operational, but most of the surface mines in the corridors are not.

The major groups of topographic features can be seen in Exhibit 4-16, which shows agricultural land (flat to rolling), forested areas (steeper hills), and surface mines (poorly drained with elongated lakes and ridges).

Corridor A, beginning in the east, follows a major drainage divide along relatively flat to gently rolling agricultural land until north of Canton, where former surface mines cover much of the corridor area. West of Canton, the corridor follows a more rugged, westward flowing tributary of the Spoon River, with former surface mines still to the south. From the more rugged Spoon River drainage area the corridor crosses the flatter agricultural land dividing the Spoon River and La Moine River watersheds, in the vicinity of IL 41. It ends at the west in the more gentle La Moine River watershed.

Corridor B coincides with Corridor A to Hanna City, then cuts straight to the south of Canton, crossing several drainages in relative rugged and wooded terrain. Just to the south and east of Canton, much of the corridor area is covered with former surface mines, and remains so until west of Cuba, where the corridor enters the more wooded and rugged Spoon River drainage area. As shown in Exhibit 4-16, the western part of the route lies in the relatively flat to gently rolling divide between the Spoon River and the La Moine River.

Corridor C follows along the floodplain of the Illinois River about to the intersection of US 24 and IL 78 north. Then it crosses a small wooded drainage and enters the Spoon River drainage area, which has more rugged wooded areas interspersed with flatter agricultural land. As with Corridor B, the western part of the route lies in the relatively flat to gently rolling divide between the Spoon River and the La Moine River.

The only major elevation change occurs in Corridor C where the option connector to Canton transitions from the flood plain to the bluff of the Illinois River near Banner. Existing Illinois Route 9 makes this transition with truck passing lanes and grades greater than 6%.

4.5.2 Geology

Both underground and strip mining activities have been conducted in the study area especially in an area bordered by Norris on the north, Saint David on the south, Cuba on the west and just east of Canton on the east (Exhibit 4-16).

Former surface mining has left irregular shaped lakes, dry pits and piles of uncompacted mining spoils. Building the roadway across lakes and uncompacted fill will affect the design and will add cost.

Potential subsidence must be addressed in areas underlain by underground mines. Previous reports indicate that areas pitted by coal mine subsidence occur near Cuba and St. David (Goodfield, 1970). The same report indicates that the cave-ins occur under small streams which then drain into the mine workings. Subsidence may result from mine roof failure or from squeezing of the underclay out from underneath a pillar.

Additional geotechnical studies are recommended when final alignments are developed.

4.5.3 Geometric Considerations

4.5.3.1 General

The local topography for each of the considered alignments under consideration has an important influence on the horizontal and vertical alignments. For the purpose of developing comparative cost estimates, typical sections were developed for assumed bands in each corridor, using both expressway and freeway criteria from the IDOT Bureau of Design and Environment (BDE) Manual, as appropriate. In addition to the Departments guidelines, the current AASHTO - *A Policy on Geometric Design of Highways and Streets* was used as a reference.

4.5.3.2 Horizontal Alignment

For the band evaluation a minimum design speed of 70 mph was used for mainline travel lanes. The curvature used provides a gentle transition between all tangent changes in direction. Whenever possible, abrupt reverse changes in direction were avoided. Where this is not possible, an acceptable tangent length was introduced between reverse cures to allow for a smooth transition in superelevation of the mainline pavement.

Whenever changes in direction occur, it is preferred that they take place in opposite directions. This is especially true when the distances between curves is in the same direction are less then

1500 feet. This is consistent with driver expectations because most drivers do not anticipate successive curves in the same direction.

4.5.3.3 Vertical Alignment

Emphasis to maintain smooth, gradual changes in grade that are consistent with design speed characteristics were implemented into the design considerations. This was integrated into the local topography as much as possible. The maximum grade for a facility of this type is 3%. This will be used during the alignment phase. Where this is not possible truck passing lanes or other special designs will be used.

4.5.4 Structures

Structures of various types and lengths will be required to traverse the terrain for all three corridors. Bridge structures will be required to carry traffic over the Spoon River, over and under various U.S. routes, state routes, local roads and over railroads. Bridge and culvert structures will be required to carry traffic over other bodies of water.

Table 4-2 presents the estimated number and type of crossing for each corridor, broken out by segment (east or west). For these same crossings, Table 4-3 presents the estimated number of structures required for the crossings listed in Table 4-2, for the case of expressway and for freeway. Both are shown because the decision of facility type has not yet been made.

4.5.4.1 Spoon River Crossing

All three corridors require crossing the Spoon River. About 12-15 miles of each corridor is in the drainage area of the Spoon River, which is characterized by more rugged topography than much of the rest of the study area. Existing Spoon Rive crossings are at IL 9 in Corridor A and at IL 95 in Corridor B. Existing crossing locations merit consideration since they may have historically proven attributes. In addition, environmental impacts may be reduced by using an existing crossing rather than constructing a new one.

4.5.4.2 Interchange / Intersections

Three US highways and seven Illinois highways run through the study area. The number of interchanges required to connect to these highways depends on the corridor and the type of facility, freeway or expressway. The number of structures required for each interchange also depends on the corridor and the configuration of the interchange. Expressways may have at grade intersections instead of interchanges. The estimated number of interchanges, interchange structures and intersections is shown in Table 4-3.

4.5.4.3 Crossroads

All three corridors will require bridges over or under existing crossroads. Expressways may have at grade intersections. The estimated number of crossroads and structures is shown in Table 4-3.

4.5.4.4 Railroads

All three corridors will require grade separations with existing railroads. The estimated number of railroads and structures is shown in Table 4-3.

4.5.4.5 Water Features Other than the Spoon River

All three corridors will require bridges over major water features and culvert structures over minor water features. The number of estimated structures is shown in Table 4-3.

4.6 COST

Preliminary construction cost estimates for the three corridors are summarized in Table 4-4. The corridor costs are each separated into an east and west component with the City of Canton as the dividing point. As discussed above, the cost estimates were prepared using typical sections developed for assumed bands in each corridor, using both expressway and freeway design criteria. The cost estimates are for construction only and do not include engineering, utility relocation, or right-of-way acquisition. Costs are in current dollars and no contingency has been applied. The costs are intended for comparative purposes only.

Costs were developed by estimating unit quantities for each band for items associated with roadway construction, and with the construction of the structures listed in Table 4-2. Roadway unit quantities include such items as earth/rock removal, earthwork, base courses and pavement; and standard associated details such as fencing, underdrainage, signage, etc. Quantities were also developed for items such as wetland creation, erosion control, urban drainages, interchanges, side road improvements, frontage roads, and strip mine embankments and drainage. The structure types are the Spoon River Bridge, interchange bridges and structure crossings. Structure crossings include bridges and culverts. Culverts include box culverts and pipe culverts. Unit demolition costs were also included.

Aerial photography, GIS information and topographic mapping were used to estimate unit quantities. Unit costs were based on experience and published information.

Overall estimated costs ranges for the three corridors are shown in Table 4-4.

The cost of Corridor C is substantially higher than either of the other two routes primarily due to the high cost of upgrading the eastern urban arterial part of it to expressway or freeway standards.

TABLE 4-1
CORRIDOR COMPARISON

	A - Green	B - Blue	C - Red
Corridor Length (in Miles)	57	56	61
Percent of Corridor Agricultural	87%	67%	62%
Percent of Corridor Wooded	8%	23%	20%
Percent of Corridor Wetlands	2%	5%	8%
Stream/River Crossings	26	23	34
Railroad Crossings	3	4	4
Potential Endangered Species Habitats in Corridor	3	3	9
Public Parks, Recreation Areas, or Wildlife Refuges in Corridor	3	2	4
Rating on How Well the Corridor Serves Communities and Traffic Patterns (1-10, 10 Best)	8	6	4
Potential Residential/Business Relocations	80 +/-	90 +/-	120 +/-

Table 4-2
Crossings by Corridor

Crossing Type	Corridor A				Corridor B				Corridor C			
	East		West		East		West		East		West	
	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way
Spoon River	0	0	1	1	0	0	1	1	0	0	1	1
Interchanges	5-10	5-10	4-6	4-6	8	8	5	5	5	5	6-7	6-7
Cross Roads	25-30	25-30	22	22	28	28	22	22	33	33	47-48	47-48
Railroads	1	1	1-2	1-2	1	1	3	3	2	2	2	2
Water Features	13	13	11-12	11-12	6	6	16	16	8	8	18-25	18-25
Total Number of Crossings	44-54	44-54	39-43	39-43	43	43	47	47	48	48	75-82	75-82

Table 4-3
Structures by Corridor

Structure Type	Corridor A				Corridor B				Corridor C			
	East		West		East		West		East		West	
	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way
Spoon River	0	0	1	1	0	0	1	1	0	0	1	1
Interchanges	5-10	5-10	4-6	4-6	8	8	5	5	5	5	6-7	6-7
Cross Roads	0	25-30	0	22	0	28	0	22	0	33	0	47-48
Railroads	1	1	1-2	1-2	1	1	3	3	2	2	2	2
Water Features	13	13	11-12	11-12	6	6	16	16	8	8	18-25	18-25
Total Number of Structures	19-24	44-54	17-21	17-43	15	43	25	47	15	48	27-35	75-82

Table 4-4 - Summary of Costs

Million $

Cost Item	Corridor A				Corridor B				Corridor C			
	East		West		East		West		East		West	
	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way	Ex-way	F-way
Roadway Costs												
Roadway	168.30	368.96	156.77	198.00	211.42	279.74	224.16	287.42	463.31-463.49	884.51	248.91-249.71	347.66-348.80
Interchanges	27.50	95.00	33.00	38.00	44.00	76.00	27.50	47.50	27.50	47.50	33.00-38.50	57.00-66.50
Structure Costs												
Spoon River Bridge	0.00	0.00	2.40	3.24	0.00	0.00	2.40	3.24	0.00	0.00	2.40	3.24
Interchange Bridges/Cross-overs	3.40	32.64	4.08	21.22	5.44	29.38	3.40	22.03	3.40	31.01	4.08-4.76	43.25-44.06
Waterway Crossings	4.68	6.32	4.32	5.34	5.76	7.78	2.16	2.92	6.42	3.89	13.26-15.77	12.00-15.40
Railroad Crossings	1.04	1.40	2.08	1.40	1.04	1.40	3.12	4.21	2.08	2.81	2.08	2.81
Total Estimated Construction Costs (rounded to nearest $ 10Million)	$210	$500	$200	$270	$270	$390	$260	$370	$500	$970	$300 - $310	$800 - $1,450
Length of Corridor (miles)	28.90	33.01	26.10	23.95-26.13	28.65	28.65	26.97	26.97	14.12	19.87	41.20-41.34	41.20-41.34
Cost per Mile ($/mi)	7.3	15.1	7.7	10.22-11.15	9.4	13.6	9.6	13.7	35.4	48.8	7.3-7.5	11.2-11.6